



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,004	03/31/2006	Hiroaki Minamide	8105-1001	1275
<small>465</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			<small>7590</small> EXAMINER BAKER, DAVID S	
			<small>06/05/2008</small> ART UNIT 2884	PAPER NUMBER
			MAIL DATE 06/05/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/553,004

**Applicant(s)**

MINAMIDE ET AL.

**Examiner**

DAVID S. BAKER

**Art Unit**

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15, 16, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15, 16, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

1. The amendment filed 13 May 2008 has been accepted and entered.
2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Usami (JP 2002-303574 A) in view of Minami (US 4,874,808 A).

Regarding claim 15, Usami discloses a terahertz wave generator with optical components arranged along the optical axis (F:1-4, P:0011), wherein the frequency of the terahertz waves is 0.1 THz – 100 THz (P:0032). Usami does not disclose expressly that any of these optical components are cycloolefin components. Minami discloses cycloolefin components for use in optical systems (C:16 L:62 thru C:17 L:47). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a cycloolefin optical component in a terahertz wave optical system. The motivation for doing so would have been that cycloolefin optical components have desirable dielectric properties with a low absorption and a low index of refraction.

5. Claims 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usami (JP 2002-303574 A) in view of Minami (US 4,874,808 A) and Arnone (US 6,388,799 B1).

Regarding claim 16, Usami discloses a terahertz wave generator with optical components arranged along the optical axis (F:1-4, P:0011). Usami does not disclose expressly that any of these optical components are cycloolefin components or that the superimposed light source that is coaxial with the terahertz wave is visible light. Minami discloses cycloolefin components for use in optical systems (C:16 L:62 thru C:17 L:47). Arnone discloses a terahertz optical imaging system comprising a visible light beam superimposed on the optical axis of a terahertz beam to act as a reference (F:13; C:15 L:60 thru C:16 L:34). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a cycloolefin optical component in a terahertz wave optical system. The motivation for doing so would have been that cycloolefin optical components have desirable dielectric properties with a low absorption and a low index of refraction. Additionally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize the reference light of Arnone in the system of Usami and Minami. The motivation for doing so would have been to improve the alignment of the light beams with the detector face in order to improve the detection efficiency. At the time the invention was made, the use of visible light as an alignment tool was well known over a range of many arts including optical system alignment and referencing.

Regarding claim 18, Usami discloses that the frequency of the terahertz waves is 0.1 THz – 100 THz (P:0032).

Regarding claim 19, Usami discloses a terahertz band wave processing apparatus comprising: a terahertz band wave generator for generating predetermined terahertz waves (F:1-4, P:0032); a terahertz wave detector for detecting the terahertz waves (F:1-4, P:0033-0035); a first light transmission regulator for defining a light transmission path between the terahertz wave generator and the terahertz wave detector and regulating the optical axis (F:1-4, P: 0033-0035); a light semi-transmissive plate for transmitting terahertz waves on the optical axis between the first light transmission regulator and the terahertz wave detector and reflecting light incident at a predetermined incident angle (F:1-4, P: 0033-0035); and a second light transmission regulator set on the optical axis between the light semi-transmissive plate and the terahertz wave detector, characterized in that predetermined light enters the light semi-transmissive plate as pilot light and is transmitted by said light semi-transmissive plate and the optical axis of said light is superimposed on the optical axis of the reflected terahertz waves and the optical axis of said terahertz waves can be recognized in a simulated manner by the light (F:1-4, P: 0033-0035). Usami does not disclose expressly that a light semi-transparent plate is made of cycloolefin or that the superimposed light source that is coaxial with the terahertz wave is visible light. Minami discloses cycloolefin components for use in optical systems (C:16 L:62 thru C:17 L:47). Arnone discloses a terahertz optical imaging system comprising a visible light beam superimposed on the optical axis of a terahertz beam to act as a reference (F:13; C:15 L: 60 thru C:16 L:34). At the time the invention

was made, it would have been obvious to a person of ordinary skill in the art to use a cycloolefin optical component in a terahertz wave optical system. The motivation for doing so would have been that cycloolefin optical components have improved mechanical characteristics resulting in more durable components. Additionally, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to utilize the reference light of Arnone in the system of Usami and Minami. The motivation for doing so would have been to improve the alignment of the light beams with the detector face in order to improve the detection efficiency. At the time the invention was made, the use of visible light as an alignment tool was well known over a range of many arts including optical system alignment and referencing.

***Response to Arguments***

6. Applicant's arguments filed 13 May 2008 have been fully considered but they are not persuasive.

Regarding applicant's arguments that Usami does not disclose the use of terahertz waves of 100 GHz – 10 THz, the examiner respectfully disagrees. Usami discloses that the frequency of the terahertz waves is 0.1 THz – 100 THz (P:0032).

7. Applicant's arguments with respect to claims 16 and 18-19 have been considered but are moot in view of the new ground(s) of rejection.

Regarding the applicant's arguments that Usami and Minami do not disclose the use of a visible light beam superimposed on the terahertz beam, the examiner has included the teachings of Arnone to reinforce the rejection of the claims. Please see the above rejections for further details.

Regarding the applicant's arguments that the examiner has not provided enough clarity in the citing of reference, the examiner provides the following: the first and second light transmission regulators are equivalent to the beam splitters of Usami in that both components regulate the transmission of light by defining the path by which certain wavelengths may travel; the light semitransparent plate may be satisfied by the second curved mirror (with the teaching of Minami to provide it of cycloolefin) in the both components are semi-transmissive and reflect the terahertz light incident at a predetermined incidence angle; as for the visible light superposition limitations, the examiner directs the applicant to the above rejections.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. BAKER whose telephone number is (571)272-6003. The examiner can normally be reached on MTWRF 10:30am-7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSB

/David P. Porta/

Supervisory Patent Examiner, Art Unit 2884

